

Amendment and Response Under 37 C.F.R. 1.116

Applicant: N. Lee Rhodes

Serial No.: 09/919,149

Filed: July 31, 2001

Docket No.: 10013112-1 / H300.177.101

Title: NETWORK USAGE ANALYSIS SYSTEM HAVING DYNAMIC STATISTICAL DATA
DISTRIBUTION SYSTEM AND METHOD

IN THE CLAIMS

Please amend claims 3, 10, 13, 14, and 22 as follows:

1. (Previously Presented) A method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes; and

allocating statistical representation of the data in the data bins; and

using the data distribution to analyze the stream of data.

2. (Previously Presented) The method of claim 1, wherein creating data bins having exponentially increasing sizes includes indexing the bins using a set of keys determined from a function of the logarithm of the data, determining a set of exponentially increasing intervals to define the data bin sizes.

3. (Currently Amended) ~~The method of claim 2,~~ A method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes; and

allocating statistical representation of the data in the data bins; and

using the data distribution to analyze the stream of data;

wherein creating data bins having exponentially increasing sizes includes indexing the bins using a set of keys determined from a function of the logarithm of the data, determining a set of exponentially increasing intervals to define the data bin sizes; and

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wherein determining the set of keys includes defining a resolution factor as a number of data bins desired per power of the chosen logarithm base; and using the resolution factor to determine the set of exponentially increasing intervals.

4. (Original) The method of claim 1, wherein receiving the stream of data includes querying a data source and collecting the stream of data from the data source in response to the query.

5. (Previously Presented) The method of claim 1, comprising defining the data stream as a continuous stream of data having a data rate of at least 10,000 records/second.

6. (Original) The method of claim 1, comprising defining the stream of data as having only positive values.

7. (Original) The method of claim 1, comprising defining the stream of data as having an unknown lowest value and an unknown upper value.

8. (Original) The method of claim 1, comprising defining a bin order; and storing the bin order in memory.

9. (Original) The method of claim 8, comprising the bin order as an array structure; and storing the data bins in the array structure in memory.

10. (Currently Amended) ~~The method of claim 9,~~ A method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes;

allocating statistical representation of the data in the data bins;

using the data distribution to analyze the stream of data;

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defining a bin order as an array structure;

storing the bin order in memory; and

storing the data bins in the array structure in memory;

wherein recording statistical data representative of the incoming data value in the data bins includes receiving a data value; computing a bin key associated with the data value; define an array index having an array of index values wherein each array index value is associated with a data bin; determine the data bin associated with the data value using the array index and bin key.

11. (Original) The method of claim 10, further comprising updating the value stored in the data bin.

12. (Original) The method of claim 10, wherein if a data bin cannot be determined, extending the array structure to accommodate the data value.

13. (Currently Amended) ~~The method of claim 9,~~ A method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes;

allocating statistical representation of the data in the data bins;

using the data distribution to analyze the stream of data;

defining a bin order as an array structure;

storing the bin order in memory;

storing the data bins in the array structure in memory; and

indexing the bins using a set of keys.

14. (Currently Amended) ~~The method of 9,~~ A method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

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determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes; and

allocating statistical representation of the data in the data bins;

using the data distribution to analyze the stream of data;

defining a bin order as an array structure;

storing the bin order in memory;

storing the data bins in the array structure in memory; and

defining the array structure as a tree array structure.

15. (Original) The method of claim 14, wherein allocating a data value in the tree array structure includes determining a data bin for the data value, and if a data bin does not exist, creating a data bin.

16. (Previously Presented) A system for analyzing a stream of data comprising:
a dynamic distribution collector configured for receiving the stream of data, and determining a data distribution representative of the stream of data, including configured to create data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes, and recording a statistical representation of the data in the data bins.

17. (Original) The system of claim 16, wherein the dynamic distribution data collector is configured for indexing the bins using a set of keys determined from a function of the logarithm of the incoming data, and is configured to determine a set of exponentially increasing intervals to determine the data bins sizes.

18. (Original) The system of claim 16, wherein the data is usage data.

19. (Original) The system of claim 16 wherein the dynamic distribution data collector is configured to order the bins in an array structure.

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20. (Previously Presented) A computer-readable medium having computer executable instructions for performing a method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes; and

allocating statistical representation of the data in the data bins; and

using the data distribution to analyze the stream of data.

21. (Previously Presented) A method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes;

defining a bin order as an array structure;

storing the bin order in memory;

allocating statistical representation of the data in the data bins; and

using the data distribution to analyze the stream of data;

wherein creating data bins having exponentially increasing sizes includes indexing the bins using a set of keys determined from a function of the logarithm of the data, and determining a set of exponentially increasing intervals to define the data bin sizes.

22. (Currently Amended) ~~The method of claim 21,~~ A method for substantially real-time analyzing of a stream of data comprising:

receiving the stream of data;

determining a data distribution representative of the stream of data, including creating data bins on an as needed basis based on the stream of data, the data bins having exponentially increasing sizes;

defining a bin order as an array structure;

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storing the bin order in memory;
allocating statistical representation of the data in the data bins; and
using the data distribution to analyze the stream of data;
wherein creating data bins having exponentially increasing sizes includes indexing the
bins using a set of keys determined from a function of the logarithm of the data, and
determining a set of exponentially increasing intervals to define the data bin sizes; and
further comprising defining the array structure as a tree array structure, wherein
allocating a data value in the tree array structure includes determining a data bin for the data
value, and if a data bin does not exist, creating a data bin.